CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)

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Project Number

35902

Project Title

Livin' the Hydra Life: Hydra Regeneration as Affected by Different Chemical Compounds

Abstract

Objectives/Goals

I predict the compounds will have various effects on the Hydra#s regeneration which may include multiple budding, fast regeneration, retarded growth, extended tentacles, and tentacle paralysis. However, I do not know which compound will have which effect.

Methods/Materials

At least 50-60 Hydra without buds, Scalpel or Razor Blade for dissection, Digital Microscope Camera, 6 Trays, each tray contains 6 mini Petri dishes (wells), 5 compounds, each with their own chemical make-up, Eyedropper to transport Hydra, Brine Shrimp, A photograph depicting the six stages of head regeneration in Hydra

Results

Compound A after 36 hours had 0 Hydra regenerate to their full body. Compound B had 7Hydra that fully regenerated after 36 hours. Compound B had caused tentacle paralysis to the point where the Hydra had no visible reaction to me pinching their tentacles with a pair of tweezers. Compound C had a total of 9 fully regenerated Hydra. When I examined the 9 Hydra, I noticed that their basal disks (the foot of the Hydra) were much larger than the control group. Compound D regenerated almost twice as fast as the control group and the other compounds, and almost three times as fast as Compound A. These Hydra also exhibited an excessive amount of budding. Compound E had similar results to Compound B, but the dish contained more fully regenerated Hydra, with a total of 12. These Hydra had tentacle paralysis and longer tentacles as well.

Conclusions/Discussion

Of all regenerations, Compound D had the most full body regenerations with 17. Along with the most regeneration, Compound D also had sporadic budding. The control group had 14 Hydra that completely regenerated. There was no chemical compound added to this group so I was expecting to see at least half regenerate. Compound E regenerated the next highest, 12. After the 36 hours, I took the regenerated ones and saw that the Hydra that did regenerate had no sensation in their tentacles. Also, their tentacles were much longer than normal. Compound C is next with nine Hydra regenerations. When I examined these Hydra, I saw that they were much bigger and bloated than the rest of the Hydra that regenerated. Compound B had 7 total regenerations. And lastly, Compound A had zero regenerations.

Summary Statement

I tested the affects of different chemical compounds on the Hydra regeneration process and its resulting morphology.

Help Received

Used lab equipment at University of California Irvine under the supervision of Dr. Felix Grun